

High-efficiency Circulator Pump

Calio S

Type Series Booklet



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Type Series Booklet Calio S

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Building Services: Heating

Variable-Speed Circulator Pumps

Calio S



Main applications

Heating, ventilation, air-conditioning and circulation systems

- One-pipe and two-pipe systems
- Underfloor heating systems
- Boiler or primary circuits
- Storage tank circuits
- Solar power systems
- Heat pumps

Fluids handled

- Heating water to VDI 2035
Can handle higher-viscosity fluids (e.g. water/glycol mixture up to mixing ratio of 1:1)
- Pure, thin, non-aggressive and non-explosive fluids not containing any mineral oil, solids or long fibres
- Fluids with a viscosity of max. 10 mm²/s

Operating data

Operating properties

Characteristic		Value	
		Calio S	Calio S BMS
Flow rate	Q [m ³ /h]	≤ 3.5	≤ 7
	Q [l/s]	≤ 1.0	≤ 1.95
Head	H [m]	≤ 6	
Fluid temperature ¹⁾	T [°C]	2 to 95	-10 to +110
Ambient temperature	T [°C]	0 to 40	
Operating pressure	p [bar]	≤ 10	

¹⁾ To prevent condensation in the terminal box and stator, the fluid temperature must always be equal to or higher than the ambient temperature.

Characteristic		Value	
		Calio S	Calio S BMS
Sound pressure level	[dB (A)]	< 45	
Piping connection		R 1/2, R 1, R 1 1/4	

Designation

Example: Calio S 25-40-130

Designation key

Code	Description
Calio S	High-efficiency pump
25	Nominal diameter of pipe connection 15 = R 1/2 25 = R 1 30 = R 1 1/4
40	Head in m x 10 (example: 4 m = 40)
-130	Overall length 130 mm
BMS	Building Management System

Design details

Design

- Highly efficient, maintenance-free wet rotor pump (glandless)
- Screw-ended

Drive

- High-efficiency electric motor with continuously variable differential pressure control
- Electronically commutated synchronous motor with permanent magnet rotor
- 230 V - 50/60 Hz
- Thermal class F

Calio S:

- IP42 enclosure
- Temperature class TF 95
- Interference emission EN 55014-1
- Interference immunity EN 55014-2

Calio S BMS:

- IP44 enclosure
- Temperature class TF 110
- Interference emissions EN 61 000-6-3
- Interference immunity EN 61 000-6-2

Bearings

- Product-lubricated special plain bearing

Operating modes

- Automatic mode with constant-pressure or proportional-pressure control
- Fixed-speed operation with manual setpoint input

Calio S BMS:

- Automatic mode with constant-pressure or proportional-pressure control, Eco Mode, Boost Mode

Automatic functions

- Continuous output adjustment depending on the operating mode
- Soft start (limitation of starting current)
- Full motor protection with integrated trip electronics
- Setback operation

Calio S BMS:

- 0 – 10 V with external differential pressure/speed setpoint
- External start/stop
- General fault message

Manual functions

- Setting the operating mode
- Setting the differential pressure setpoint
- Setting the speed level
- Vent function
- Deblocking option

Calio S BMS:

- Self-venting function
- Automatic deblocking function (pump starts at max. torque and current limitation with an unlimited number of start-up attempts)

Signalling and display functions

- Alternating display of flow rate and electrical input power
- Error messages on the display

Materials

Overview of available materials

Component	Material	
	Calio S	Calio S BMS
Volute casing	Grey cast iron with cathodic electrocoating	
Shaft	Ceramics	Stainless steel 1.4034
Impeller	Plastic with glass fibre content (PA - GF 35)	Plastic with glass fibre content (PSU-GF30)
Bearing	Ceramics	Ceramics/carbon
Bearing plate	Stainless steel 1.4301	
Can	Stainless steel 1.4301	
Thermal insulation shells	Polypropylene	

Product benefits

Calio S

- Maximum savings of operating costs by high-efficiency technology combined with speed control
- Future-proof by maximum energy efficiency, exceeding future energy efficiency regulations such as ErP2015
- Easy to use with a combination of control keys, integrated display and symbols showing the operating status
- High availability by manual and integrated protective functions
- Compact dimensions and KSB plug make the pumps easy to install. Thermal insulation shell included in the scope of supply.

Calio S BMS

- Maximum savings of operating costs by high-efficiency technology combined with speed control
- Future-proof by maximum energy efficiency, exceeding future energy efficiency regulations such as ErP2015
- Simple to set with turn&press dial combined with an integrated display and symbols indicating the operating mode
- Integrated 0 - 10 V DC, External Start/Stop and general fault message functions
- New Eco Mode for additional savings of more than 40% compared with proportional-pressure control.
- Thermal insulation shell included in scope of supply

Certifications

Overview

Label	Valid in:	Comment
	Europe	Calio S 15...-40 EEI ≤ 0.20 Calio S 15...-60 EEI ≤ 0.23 Calio S 25/30-60 BMS EEI ≤ 0.23
	Germany	All sizes

Selection information

Minimum pressure

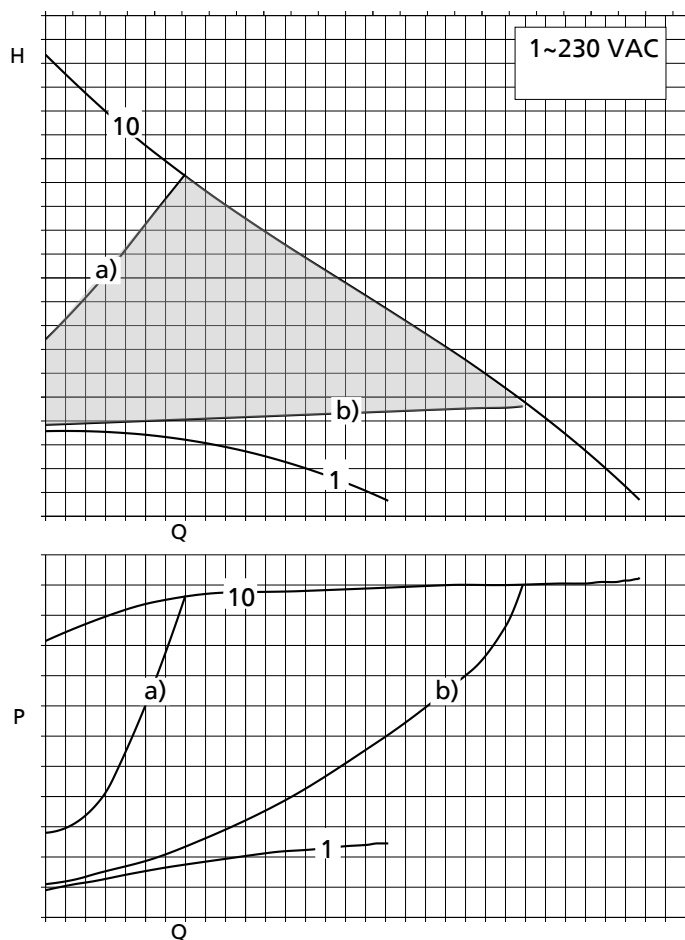
The minimum pressure $p_{\min}$ at the pump suction nozzle serves to avoid cavitation noises at an ambient temperature of +40 °C and the indicated fluid temperature $T_{\max}$.

The indicated values are applicable up to 300 m above sea level. For installation at altitudes > 300 m, an allowance of 0.01 bar / 100 m must be added.

Minimum pressure $p_{\min}$ [bar] specified for the fluid temperature [°C]

Calio	Fluid temperature	Minimum pressure
	[°C]	[bar]
S	5 to 75	0,05
	76 to 95	0,28
S BMS	5 to 80	0,5
	81 to 95	1,5

Description of the characteristic curve



Selection example

1	Min.	Fixed speed operation
10	Max.	Fixed speed operation
	Control range, settings in 0.1 m increments	
a)	Control curve, maximum head	
b)	Control curve, minimum head	

 The characteristic curve can be adjusted between a) and b) by pressing the control keys.

Programme overview / selection tables

Features and functions

Features and functions

Functions	Feature	
	Calio S	Calio S BMS
Operating modes		
Δp -v for variable differential pressure	X	X
Δp -c for constant differential pressure	X	X
Fixed speed operation	X	X
Eco Mode	-	X
Manual functions		
Setting the operating mode	X	X
Setting the differential pressure setpoint	X	X
Setting of speed level	X	X

Functions	Feature	
	Calio S	Calio S BMS
Vent plug	X	-
Deblocking option	X	-
Automatic functions		
Continuous output adjustment depending on mode (Δp control)	X	X
Setback operation	X	X
Soft start	X	X
Integrated interfaces: 0 - 10 V DC, external start/stop, general fault (volt-free relay contact)	-	X
Signalling and display functions		
Error codes shown on display	X	X
"System operational" message via additional module	-	-
Alternating display of flow rate and electrical input power	X	X

Technical data

Selection table Calio S

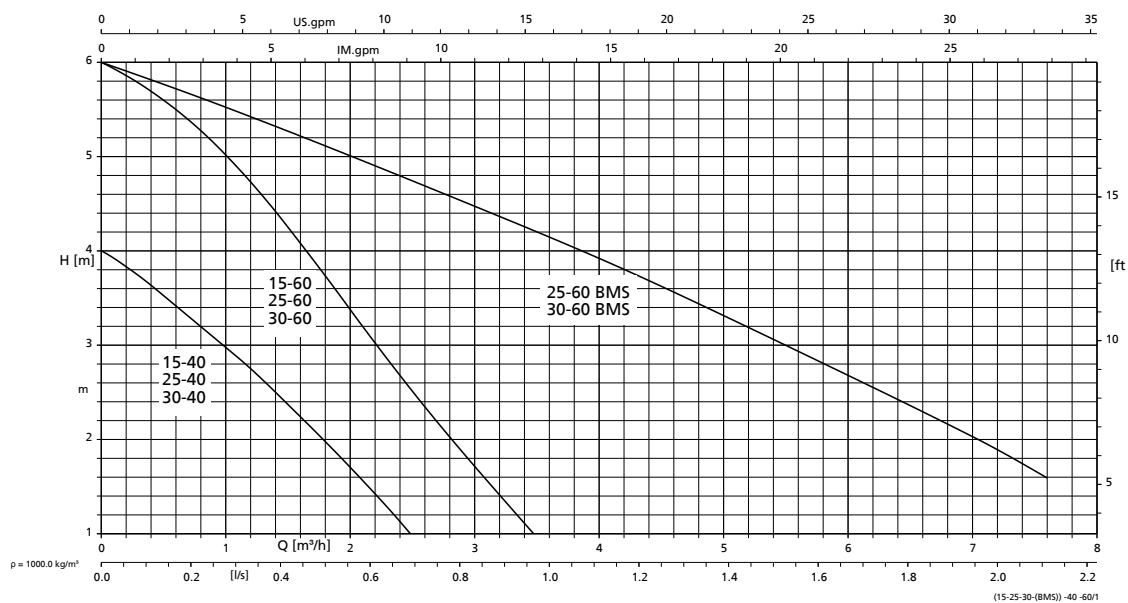
Calio S	Connection		PN	P ₁ [W]	Motor protection ²⁾	Signalling contacts ³⁾	Nominal current 1~230 VAC, 50/60 Hz [A]	Mat. No.	[kg]
	Piping	Pump							
15-40-130	R ½	G 1	10	4,0 - 23	X	-	0,05 - 0,23	29134760	2.5
15-60-130	R ½	G 1	10	4,0 - 47	X	-	0,05 - 0,48	29134761	2.5
25-40-130	R 1	G 1 ½	10	4,0 - 23	X	-	0,05 - 0,23	29134762	2.5
25-60-130	R 1	G 1 ½	10	4,0 - 47	X	-	0,05 - 0,48	29134763	2.5
25-40	R 1	G 1 ½	10	4,0 - 23	X	-	0,05 - 0,23	29134756	2.7
25-60	R 1	G 1 ½	10	4,0 - 47	X	-	0,05 - 0,48	29134757	2.7
30-40	R 1 ¼	G 2	10	4,0 - 23	X	-	0,05 - 0,23	29134758	2.7
30-60	R 1 ¼	G 2	10	4,0 - 47	X	-	0,05 - 0,48	29134759	2.7
25-60 BMS	R 1	G 1 ½	10	8,0 - 100	X	X	0,10 - 0,80	29134307	4.6
30-60 BMS	R 1 ¼	G 2	10	8,0 - 100	X	X	0,10 - 0,80	29134308	4.8

²⁾ Integrated motor protection

³⁾ General fault message relay and terminal pairs for 0 - 10 V input and external start/stop

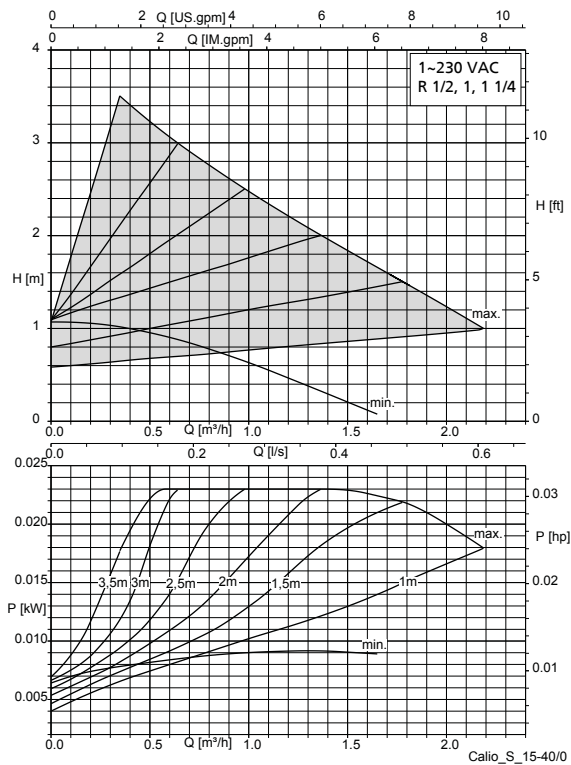
Selection chart

Calio S

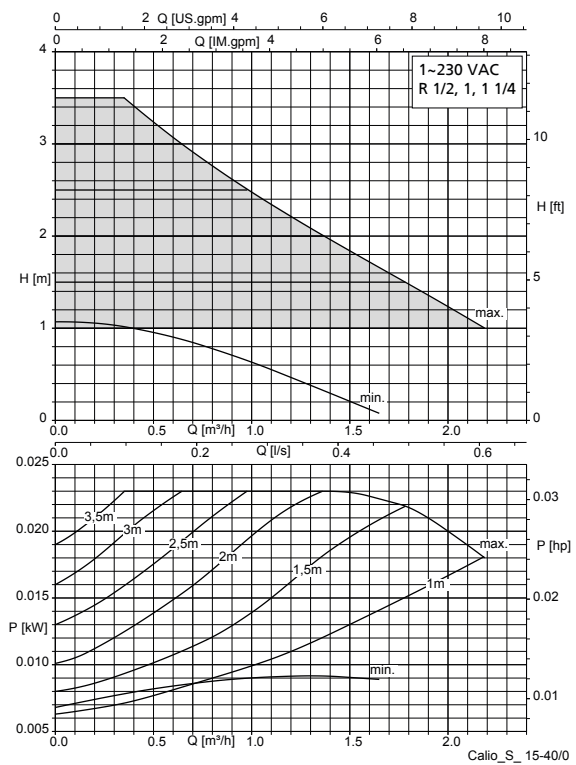


Characteristic curves

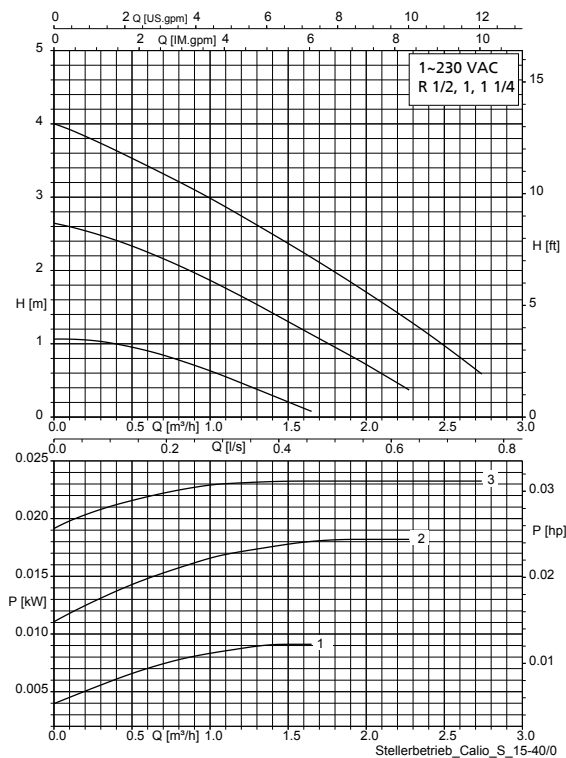
Calio S 15/25/30-40 Δp_v



Calio S 15/25/30-40 Δp_c

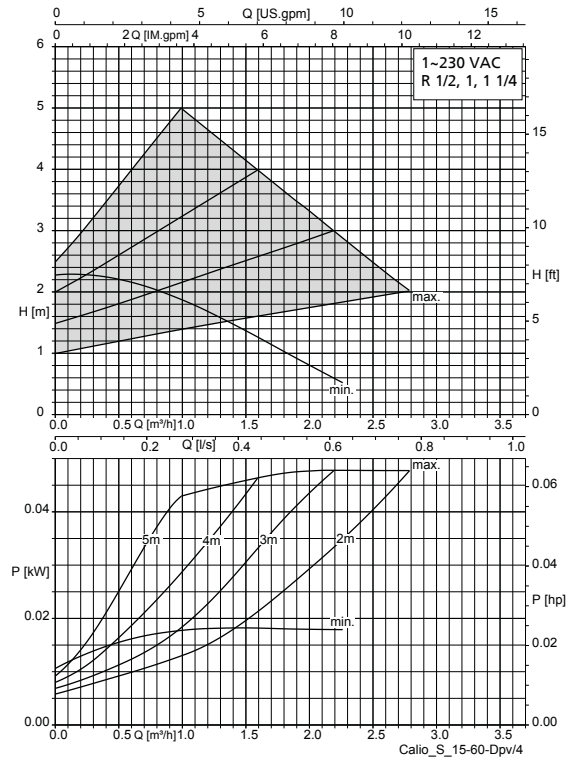


Calio S 15/25/30-40 fixed speed operation

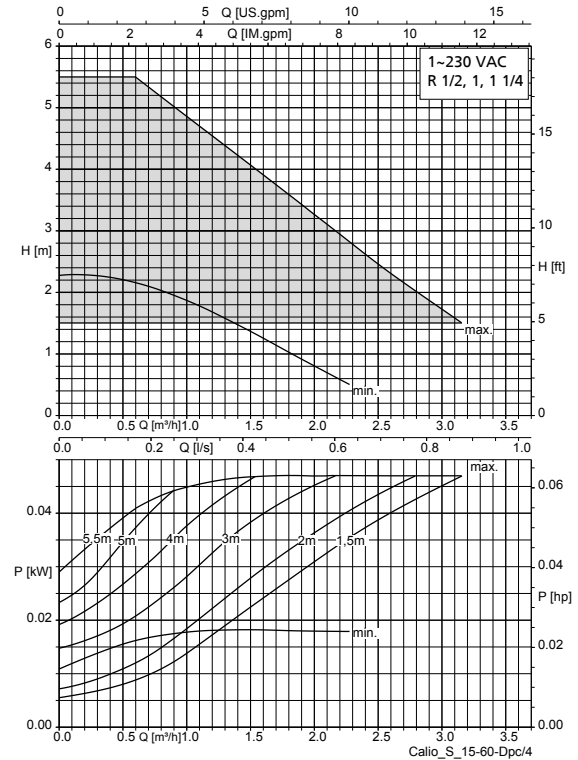


1, 2, 3 = speed level 1, 2, 3

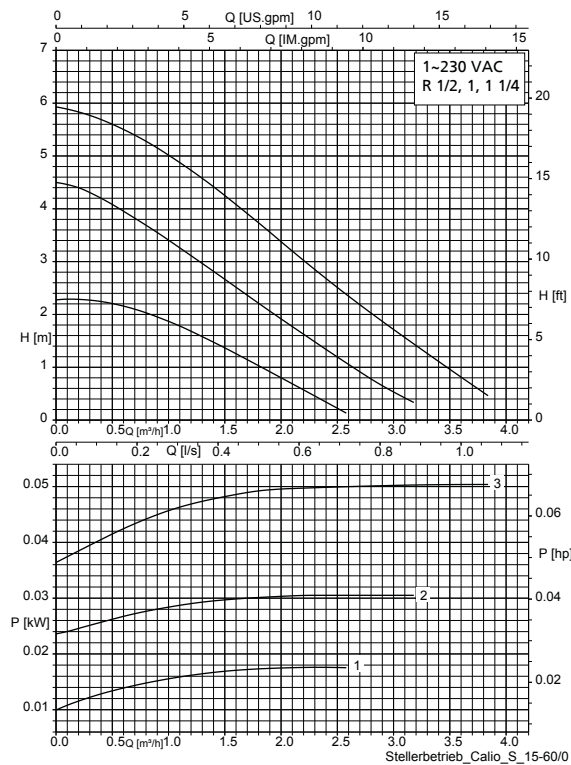
Calio S 15/25/30-60 Δpv



Calio S 15/25/30-60 Δpc

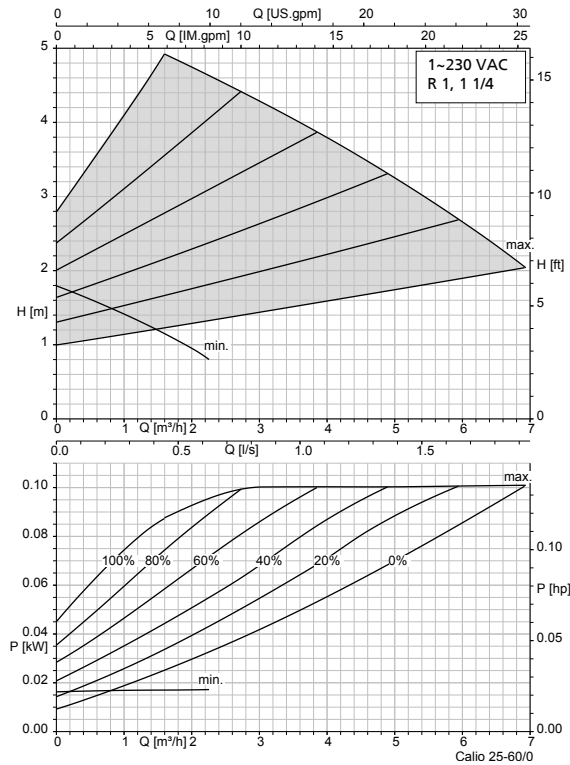


Calio S 15/25/30-60 fixed speed operation

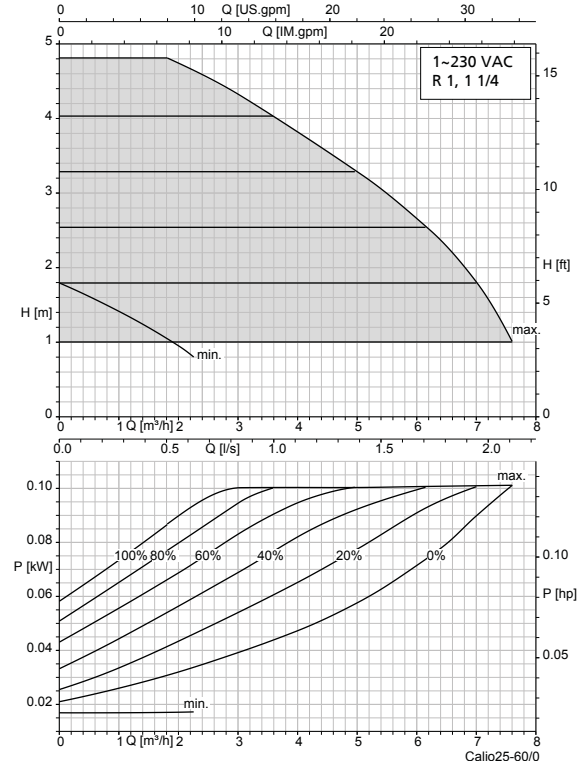


1, 2, 3 = speed level 1, 2, 3

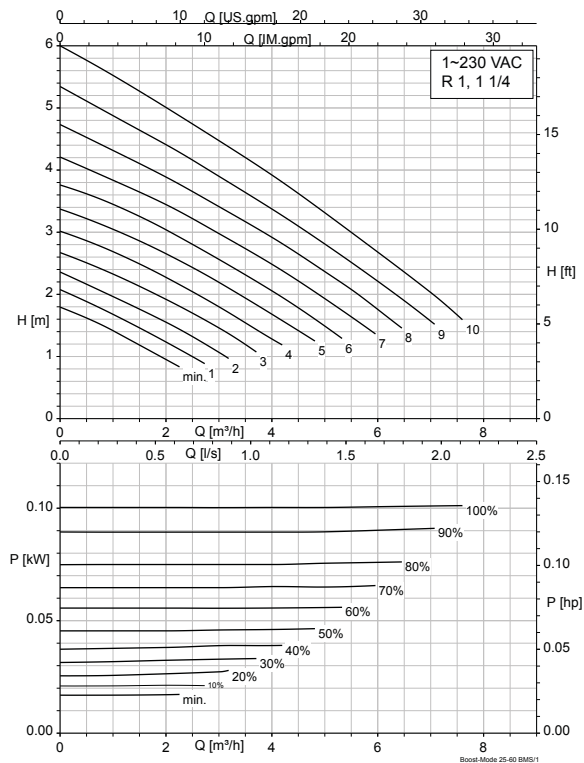
Calio S BMS 25/30-60 Δp_v



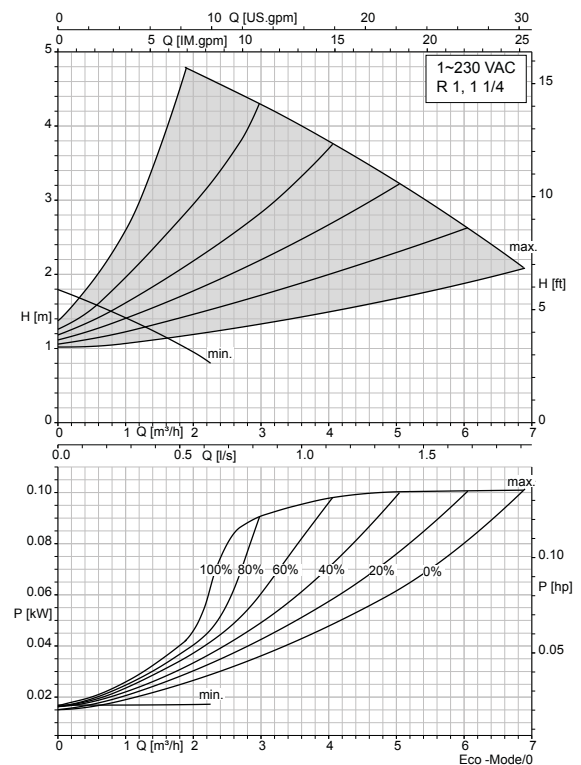
Calio S BMS 25/30-60 Δp_c



Calio S BMS 25/30-60 fixed speed operation



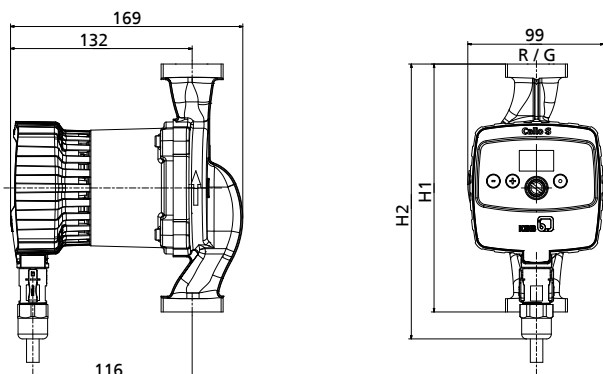
Calio S BMS 25/30-60 Eco Mode



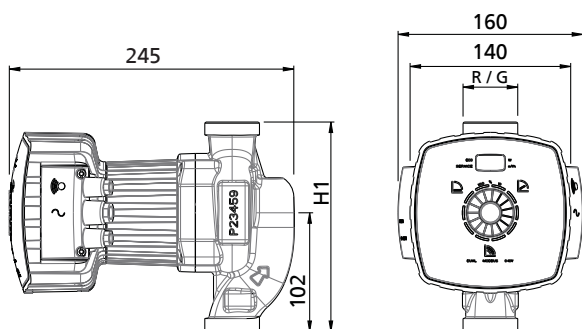
Total of 100 speed levels can be set between stage "min" and "10".

Dimensions

Calio S



Calio S



Calio S BMS

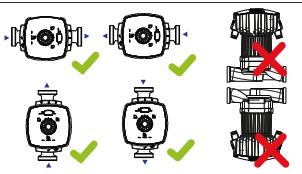
Dimensions [mm]

Size	Rp	G	H1	H2
15-40-130	1/2	1	130	150
15-60-130	1/2	1	130	150
25-40-130	1	1 1/2	130	150
25-60-130	1	1 1/2	130	150
25-40	1	1 1/2	180	200
25-60	1	1 1/2	180	200
30-40	1 1/4	2	180	200
30-60	1 1/4	2	180	200
25-60 BMS	1	1 1/2	180	-
30-60 BMS	1 1/4	2	180	-

Installation information

Calio S

Permissible installation positions

Sizes	
All	

Scope of supply

- Pump
- Sealing elements
- Installation and operating manual
- Thermal insulation shells (for 180 mm overall length only)



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